

PROCEEDINGS

OF THE

ACADEMY OF NATURAL SCIENCES

OF PHILADELPHIA.

VOL. I.

JUNE, 1841.

No. 3.

ORDINARY MEETING, JUNE 1, 1841.

VICE PRESIDENT MORTON in the Chair.

DONATIONS TO THE MUSEUM.

A collection of Shells, embracing the following species, was presented by D. J. C. Jay, of New York, through Mr. Phillips, viz :

Mactra similis? *Cytherea chione*, *C. maculata*, *C. tigerina*, *Venus pullastra*, *V. rugosa*, *V. decussata*, and two other species, *Cyprina islandica*, *Artemis elegans*, *Capsa levigata*, *Cardium muricatum*, *Anadonta anatina*, *Unio limosus*, *Solen* —, *Mytilus* —, *Haliotis* (2 species,) *Bulla zeylanica*, *Patella cochlear*, *P. monopsis*, *P. oculus*, *P. granatina*, and 7 other species, *Fissurella* —, *Helix* —, *Bulimus hæmastomus*, *B. taunaysii*, *Ampullacera avellana*, *Ampullaria* —, *Neritina granulosa*, *Nerita* —, *Turbo coronatus*, *T. radiatus*, *T. argyrostomus*, *T. concavus*, *Trochus Cookii*, and two other species, *Pyrula Dussumieri*, *Triton spengleri*, *T. succinctum*, and one other species,

Ranella argus, *R. bufonia*, and one other species; *Murex brandaris*, *Turbinella capitellum*, *Strombus lentiginosus*, *S. Tankervillei*, *S. pugilis*, *Cerithium ebeninum*, *Purpura consul*, *P. haustum*, *P. hæmastoma*, *P. hippocastanum*, *P. succincta*, *P. ligata*, *Concholepas peruvianus*, *Buccinum moniliferum*, *Voluta elongata*, *Conus arenatus*.

Struthiolaria nodulosa.—From Mr. B. H. Tanner.

Helix dentifera, *H. subglobosa*, *H. intertexta*, *H. limatula*, *H. minuscula*, *H. multidentata*, *H. egena*. *H. electrina*, and a nondescript *Planorbis*.—From Dr. Amos Binney of Boston.

Elaps fulvius, S. Carolina.—From Mr. James Read.

Janthina communis, with the animal, *Sigaretus perspectivus*, also with the animal. Three species of Linnean cancer; and a collection of fishes from the Gulf of Mexico.—From Mr. F. H. Baker.

Achatina zebra. *Venus tripla*, and a *Pholas*, from Africa.—From Dr. Wm. Blanding.

Scorpio, *Rana*, two gigantic beetles, and other insects and reptiles, from Western Africa.—Presented by Dr. Johnson of Liberia.

Three antique Mexican Idols, formed of baked clay. Presented by Wm. Augustus Twigg, Esq. Also from the same gentleman, a *Syngnathus* from the Gulf of Mexico.

Dr. Morton deposited casts, in plaster, of the six skulls of ancient Peruvians obtained and brought to Europe by Mr. Pentland.

Mr. Robert Pearsall presented seventeen additional chairs for the use of the members.

DONATIONS TO THE LIBRARY.

Monograph of the *Limniades*, or Fresh water Univalve Shells

of the United States. By S. S. Haldeman. 8vo. Philad. 1841. No. 2. From the Author.

Stirpium rariorum minusque cognitarum in Sicilia sponte provenientium descriptiones, nonnullis iconibus auctæ. Auctore Antonio Bivona Bomardi. 8vo. Panormi, 1813. From Mr. Haldeman.

Report on the Geological Survey of New York, for 1840. From Dr. L. C. Beck.

The Floral Magazine and Botanical Repository, 4to. Philad. Nos. 1, 2, 3 and 5. From Mr. W. P. Gibbons.

Catalogue of Shells, arranged according to the Lamarkian system, together with descriptions of new or rare species, contained in the collection of J. C. Jay, M. D. 4to. New York, 1839. 2 copies. From the Author.

Illustrations of Ornithology. By Sir William Jardine, and Prideaux John Selby. 3 vols. 4to. Edinburgh. Presented by Messrs. Poulson, Hembell, Elwyn, Wetherill, Vaux, Ashmead and Morton.

WRITTEN COMMUNICATIONS.—Mr. J. S. Phillips read descriptions of two new American species of the genus *Helix*: viz.

Helix Bidentifera.—Testa convexa, depressa, corneo-lutea; regulariter et tenuiter striata, striis longitudinalibus, obliquis; umbilicata, apertura compressa; labro subreflexo, duobus dentibus albis, rotundis, parvulis, in margine inferiore, instructo.

Shell much depressed, rather thin, epidermis yellowish horn colour shining; whorls six, rounded, with very numerous, raised, oblique striæ; suture strongly impressed; aperture compressed, contracted by a groove behind the outer lip; outer lip moderately reflected; within the edge of the aperture on the lower portion, two fine rounded white teeth, one near the umbilicus, the other nearly equidistant from the extremities of the outer lip; umbilicus round, of moderate diameter, not encroached on by the outer lip, well defined and deep; base rounded, more convex than the

upper surface, transverse diameter 2.5 of an inch, height 1.6 of an inch. Brought from North Carolina by Mr. T. Nuttall.

This shell differs from all the known American *Helices*, in the character of the two minute, well defined teeth on the outer lip, while it is without a trace of a tooth on the pillar lip.

Helix lasmodon. Testa subelevata, centiculata, crassiuscula, umbilicata, substriata; apertura compressa; labro acuto, uno vel duobus dentibus lamellosis; base rotundato; colore albo corneo. Shell moderately elevated, lenticular; rather thick; epidermis pale whitish horn colour, smooth, shining; whorls eight, very faintly and obliquely striated; suture indistinct; aperture compressed, within a broad calcereous deposit, and one or two lameller teeth following the direction of the whorls; lip acute; umbilicus moderately large, rounded and deep; base regularly rounded into the umbilicus. Transverse diameter 7.20, height 3.20 of an inch. Brought from Alabama by Dr. W. Blanding.

This shell resembles no other American species but *H. suppressa* Say, and *H. gularis* Say, and from these it differs decidedly in the well defined and deep umbilicus; it differs from *H. Epistilium*, in the smaller size, greater number of whorls, large umbilicus and lenticular form.

Mr. T. A. Conrad read a paper descriptive of twenty-six new species of Fossil shells, discovered by him in the Medial Tertiary deposits of Calvert Cliffs, Maryland, viz.:

VENUS.

Venus latilirata.—Trigonal, convex depressed, ribs concentric, about 5 or 6 in number, flattened, reflected, irregular, one of them generally very wide; ribs irregularly sulcated on the posterior slope; inner margin finely crenulated. Smaller than *V. alveata*, and with broader, less prominent ribs, which do not diminish in size on the posterior margin.

CYTHEREA.

Cytherea subnasuta.—Trigonal, thin, ventricose; anterior side nar-

rowed, slightly produced and subangulated at the extremity; surface with rather prominent concentric wrinkles; posterior margin obliquely arched; beaks distant from anterior extremity, and not nearly central; length 1 1-8 inch. Allied to *C. Sayana*, but is proportionally longer, less ventricose, narrower, and more produced anteriorly.

LUCINA.

Lucina Foremani.—Orbicular, ventricose, moderately thick; surface with irregular shallow grooves, and rather distant prominent striæ, with intermediate fine, concentric lines; posterior margin subtruncated obliquely outwards; beaks prominent, not central; hinge edentulous. Length 1 1-2 inch. Named in honour of a zealous scientific young gentleman of Baltimore, Dr. E. Foreman.

L. subplanata.—Lentiform, convex, depressed, with prominent acute equal concentric striæ; beaks central; cardinal teeth prominent. Length 3-4 inch. Very rare.

CARDIUM.

Cardium leptopleura.—Subtrigonal, ventricose; ribs about 31, prominent, distant, angular, carinated; umbo prominent, oblique; lateral teeth very prominent; inner margin widely and deeply crenate. Length 2 1-4 inches. Height 2 inches.

ASTARTE.

Astarte varians.—Trigonal, compressed, posterior side, cuneiform, extremity acutely rounded; umbo flattened, sulcated. Length 1 1-4 inch.

Var. *A.* Proportionally shorter, more convex, with numerous concentric furrows.

Allied to *A. perplana*, but has a much deeper lunule, more oblique teeth, narrower, and more produced posteriorly.

A. exaltata.—Obovate acute, convex; umbo sulcated; apex very prominent; lunule elongated and profound. Height and length equal, 5-8 inch.

LIMA.

Lima papyria.—Obliquely obovate, thin and fragile, inflated; with prominent radiating lines, distant towards the anterior margin; anterior margin angulated at base of the ear, truncated or slightly concave below, and abruptly rounded where it joins the basal margin; ears small. Height 7-8 inch; length 3-4 inch.

ARCA.

Arca subrostrata.—Ovate; profoundly ventricose; ribs about 30, little prominent, flat, longitudinally sulcated; posterior side produced, cuneiform; rounded at the extremity; hinge linear in the middle, teeth obsolete, except towards the extremities; within slightly sulcated; crenulations of the margin sulcated in the middle. Length 2 inches.

PLEUROTOMA.

Pleurotoma Marylandica.—Fusiform, with spiral wrinkled lines; upper half of whorls of the spine concave, the lower convex, and with oblique ribs. Length 2 1-2 inches.

P. bellaerenata.—Fusiform; whorls much contracted below the middle, with obsolete spiral lines, and crenate above the suture and on the shoulder of body whirl; body whirl with five or six strong spiral striæ, and an intermediate fine line; back finely striated. Length 1 1-8 inch.

TROCHUS.

Trochus peralveatus.—Volutions 5 or 6, with each a deep groove near the base; space below the suture profoundly and widely channelled; upper margin of whirls acutely carinated; base with 5 profound grooves. Length 1 5-8 inch.

SCALARIA.

Scalaria pachypleura.—Turritted; short in proportion to its width; volutions 6 or 7, rapidly diminishing in size; ribs very thick, prominent, reflected, terminating above in prominent angles. Length 5-8 inch.

SOLARIUM.

Solarium trilineatum.—Depressed, conical; whirls with obsolete spiral lines, and fine transverse striæ, an impressed line below the suture; whirls carinated at base; suture deeply impressed; periphery carinated, and margined above and beneath by a carinated line; umbilicus profound, crenate on the margin, and with a submarginal impressed line, striæ radiating from the umbilicus, becoming obsolete towards the periphery. Width 1-2 inch.

INFUNDIBULUM.

Infundibulum perarmatum.—Trochiform; whirls convex, armed with numerous erect foliated spines. Width 1 3-8 inch.

Allied to *I. trochiformis*, Lam. but is less variable in form, and has larger spines.

FISSURELLA.

Fissurella Marylandica.—Elevated, with numerous striæ, alternated in size and minutely granulated by fine crowded concentric lines crossing them; foramen large, regularly oval. Length 1 inch.

Closely allied to *F. Griscomi*, but is readily distinguished by a much larger foramen, finer concentric lines, in not being laterally compressed, &c.

DISPOTÆA.

Dispotæa ramosa.—Suborbicular, with broad prominent ribs, and radiating, ramose, wrinkled and highly ornamental striæ; margin profoundly indented by the projecting ribs. Width 1 3-8 inch.

This species has been confounded with *D. costata*, but the ramose lines give it a very distinctive character. Occurs on James River, Virginia.

CANCELLARIA.

Cancellaria biplicifera.—Turretted, with thick longitudinal ribs, and spiral rather distant impressed lines; on the body whirl an occasional intermediate fine line; space below the suture widely and deeply channelled; shoulder coronated; umbilicus small; columella concave, and with two plaits. Length 1 1-2 inch.

C. engonata.—Short fusiform, with strong spiral prominent lines ; and numerous longitudinal costæ, not so distinct as the transverse lines ; spire scalariform, volutions, 4 ; columella with 3 plaits, the middle one very oblique ; submargin of labium with prominent transverse lines. Length 3-8 inch.

BONELLIA.

Bonellia lineata.—Subulate, polished, with obsolete spiral lines, distinctly visible only on the body whirl ; a spiral line margins the suture at base of each volution, causing the suture to appear profound ; this line is continued on the middle of the body whirl.

Very distinct from *B. terebellata*,* the deeply impressed suture and smaller umbilicus distinguish it at a glance.

TURRITELLA.

Turritella indenta.—Subulate, whirls about 15, contracted or indented above the middle, and with obsolete spiral striæ ; suture profound, the lower margin obtusely carinated by the indentation ; the upper margin also subcarinated ; basal margin acutely angulated ; base flat or slightly concave. Length 2 inches.

T. exaltata.—Subulate, profoundly elongated ; whirls convex, with spiral striæ ; base of each with a slight groove, and carinated line which margins the suture ; waived longitudinal rugæ robust.

Obtained only in fragments, but the spire tapers so gradually, that the shell must have attained between 3 and 4 inches in length by 1-2 inch in breadth.

T. perlaqueata.—Subulate, whirls convex at base, longitudinally ribbed or fluted, with very fine spiral striæ, most profound towards the base of the large volution. Length rather more than 1-2 an inch.

MARGINELLA.

Marginella perexigua.—Very small, obtusely ovate ; labrum profoundly thickened, the margin minutely crenulated ; labium with 4 plaits ; spire depressed ; volutions concealed.

A small species, very much like a *Cypræa* in form. Length 1-8 inch.

* *Bulinus tereballatus*, Lam.

Polyparia.

ASTREA.

Astrea Marylandica.—Incrusting, very thin; cells, unequal, sub-pentagonal, margin acute and prominent; radiating lamellæ distant, about 12 in number.

Frequently incrusting the *Pecten Madisonius* on James river, Virginia.

A. bella.—Incrusting, thick; cells unequal; pentagonal, rays numerous, minutely and beautifully denticulated; frequently alternated in length. Near Newbern, N. C.

Lower Tertiary Fossils.

CARDIUM.

Cardium Nicolletti.—Cordate, ventricose, polished, with crowded minute, impressed radiating lines; beaks central; summits very prominent; posterior margin nearly direct, slightly emarginate; posterior slope with larger striæ than the disk, and muricated with radiating rows of approximate, rather obtuse, slender and prominent tubercles. Length 2 1-2 inches. Height the same.

For this splendid *Cardium*, I am indebted to my distinguished friend J. N. Nicollet. It was found in green clay at 50 feet in height on the right bank of the Washita river, Monroe county, Louisiana.

FUSUS.

Fusus pachyleurus.—Fusiform, thick, with spiral striæ not very distinct; whirls of the spine concave above, convex, and with obtuse ribs below, except upon the lower whirl which is entire; body whirl also destitute of ribs, abruptly rounded or subangulated at base, ventricose; beak long, thick, straight; labium widely reflected; channel contracted. Length 2 1-2 inches.

Presented by Mr. Nicollet: it is from the Lower Tertiary of Alabama.

Professor Johnson made some remarks on the magnetic phenomena attending the congealing of cast-iron.

To observe the time and degree of rapidity of resuming the magnetic power by a mass of melted iron, a bed was formed about 3 or 3 1-2 feet in length, 5 inches deep, and of the usual form for casting pig iron; rounding at the bottom and 4 or 5 inches broad at the top. The length of this bed was nearly in the direction of the magnetic meridian.

A compass needle 3 inches long was placed near the northern end of the bed, but a little to the east, and about 5 inches short of the extremity; another needle about 7-8 of an inch long, was placed symmetrically to the west side of the bed, and about the same distance from its southern extremity. Thus a line joining the centres of the needles, would pass over the centre of the pig bed, and be about nine or ten inches shorter than the latter.

The needles having come to rest, and their positions been noted, the bed was filled with melted iron. A slight derangement of the needles occurred while the ladle was near, during the pouring of the metal; but they soon recovered their previous position, as soon as the ladle had been removed.

They were then carefully watched in order to detect the first movements which should occur after the solidifying of the pig.

At the end of 20 minutes the metal being cooled down to a heat which made it barely red in daylight, the first movements were detected, slow and scarcely perceptible, but increasing in rapidity so that at the end of two minutes, the divergency amounted to 8° ; in 4 minutes it had extended to 20° , the pig being nearly black; and in 20 minutes more, the divergency had attained its maximum of 22° from the original position. As the influence of the earth's magnetism converted the northerly part of the pig into a north pole, it of course repelled the north pole of the needle placed near it, and attracted the south. The reverse taking place at the opposite end of the pig, the north end was there attracted and the south repelled. To ascertain whether any degree of permanent magnetic force would be retained by the pig, it was thrown from its bed and caused to make one-fourth of a revolution horizontally, so as to bring its longest diameter into the magnetic east and west. In this position it exerted no power on the needle brought near either

extremity, but on reversing its position in the bed the end which had before been a north pole was made a south one ; and *vice versa*.

Dr. Morton made some remarks on the Ancient Peruvians ; that extraordinary people who preceded the Inca race, and whose monuments show a remarkable advance in civilization at a very early epoch.

“ In my work on American skulls (*Crania Americana*,) I have expressed the opinion that the heads of the ancient Peruvians were *naturally* very much elongated ; and that they differed in this respect from those of the Inca Peruvians, and other surrounding nations ; and having given this opinion at a meeting of the Academy prior to the publication of my work, I take this occasion to renounce it.

In the American Journal of Science, for March, 1840, I have already, in a brief note, adverted to this change of opinion ; and I now repeat my matured conclusions in connection with positive facts, derived from the work of a distinguished traveller and naturalist, M. Alcide D’Orbigny.

This gentleman not only visited the elevated table-land of the Andes, which was once inhabited by the ancient Peruvians, but he remained a long time in that interesting region, and has collected numerous facts in relation to the people themselves.

1. The descendants of the ancient Peruvians yet inhabit the land of their ancestors, and bear the name of Aymaras, which was probably their primitive designation.

2. The modern Aymaras resemble the surrounding Quichua or Peruvian nations, in colour, figure, features, expression, shape of the head, (which they have ceased to mould into artificial forms,) and in fact in every thing that relates to physical conformation and social customs ; their languages differ, but even here there is a resemblance which proves a common origin.

3. On examining the tombs of the ancient Aymaras, in the environs of the lake Titicaca, M. D’Orbigny remarked that those which contained the compressed and elongated skulls, contained also a

greater number that were not flattened ; whence he infers that the deformity was not natural, or characteristic of the nation, but the result of mechanical compression.

4. It was also remarked that those skulls which were flattened were uniformly those of men, while the heads of the women always retained the natural shape,—the squared or spheroidal form which is characteristic of the American race, and especially of the Peruvians.

5. The most elongated heads were found in the largest and finest tombs ; showing that the deformity was a mark of distinction among these people.

6. The researches of M. D'Orbigny confirm the statements made at distant intervals of time by Pedro de Cieza, Garcilaso de la Vega, and Mr. Pentland, and prove conclusively, what I have never doubted, that these people were the architects of their own tombs and temples ; and not, as some suppose, intruders who had usurped the civilization, and appropriated the ingenuity of an antecedent and more intellectual race.

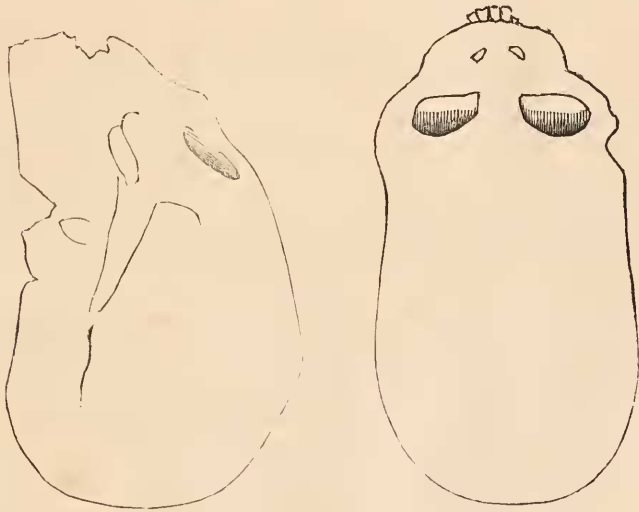
M. D'Orbigny found temples from 100 to 200 metres in length, facing the east, and ornamented with rows of angular columns ; enormous gateways made of a single mass of rock, and covered with bas reliefs ; colossal statues of basalt ; and large square tombs, wholly above ground, and in such numbers that they are compared to towns and villages.

My published observations go to show that the internal capacity of the cranium, as indicative of the size of the brain, is nearly the same in the ancient and modern Peruvians, viz. about seventy-five cubic inches, a smallness of size which is without a parallel among existing nations, excepting only the Hindoos.

M. D'Orbigny even supposes the ancient Peruvians to have been the lineal progenitors of the Inca family ; a question which is not yet decided. Supposing this to be the fact, we may inquire how it happens that the Incas should have so entirely abandoned the practice of distorting the cranium ; especially as this, among the Aymaras, was an aristocratic privilege ?

I was at first at a loss to imagine how this singular elongation of the head was effected ; for when pressure is applied to a spheroidal

head, as in the instance of the Chenouks and other tribes of the Columbia river, the skull expands *laterally* in proportion as it is depressed above; whereas, in these people, the head is narrow from the face to the occiput. It seems probable that this conformation was produced by placing splints or compresses on each side of the head from the cheek bones to the parietal protuberances, and another on the forehead, and confining them by rotary bandages. In this way the face, in the process of growth, would be protruded in front, and the head elongated backwards; while the skull, in all other directions, could expand comparatively little. These remarks will be more readily understood by reference to the annexed outlines, which are taken from a cast of one of the skulls obtained by Mr. Pentland.



Dr. Goddard suggested that the deformity observable in this series of crania, might have been produced by the action of rotary bandages alone, without the use of splints or compresses. Dr. Morton admitted the possibility of this result in some of the heads, but thought that in others there was satisfactory evidence of the use of the splint or compress, especially on the os frontis.

Dr. Morton exhibited, in further illustration, six casts of heads and three skulls of these people, all of which present the elongated form in question. For further details Dr. Morton referred to his *Crania Americana*, and to the beautiful and instructive work of M. D'Orbigny, entitled "L'Homme Americain, considéré sous ses rapports physiologiques et moraux." These works were at the same time placed on the table for inspection and comparison.

STATED MEETING, JUNE 8.

VICE PRESIDENT MORTON in the Chair.

DONATIONS TO MUSEUM.

Two mounted specimens of *Tetrao coturnix*, from the vicinity of Naples.—From Dr. C. Arrott, through Dr. Watson.

Chelonura Serpentina, or Snapper, from Fox river, Wisconsin; and *Emys insculpta* from Woodbury, New Jersey; both mounted specimens. Presented by Dr. Blanding.

DONATIONS TO THE LIBRARY.

Notes on the United States of North America, during a Phrenological visit in 1839-40. By George Combe. 2 vols. 8vo. Philad. 1841.—From Dr. Morton.

Essayo Cronologico, para la Historia General de la Florida; desde el año de 1512, que descubie la Florida, Juan Ponce